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TOWNSHIP OF ANCASTER (COUNTY
OF WENTWORTH) 1966

THE
ONTARIO WATER RESOURCES
COMMISSION
WATER POLLUTION SURVEY
of the
TOWNSHIP OF ANCASTER
COUNTY OF WENTWORTH

1966

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.A53
1966
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Report on a water pollution
survey of the township of
Ancaster, county of Wentworth.

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R E P O R T

on a

WATER POLLUTION SURVEY

of the

TOWNSHIP OF ANCASTER

County of Wentworth

1966

Division of Sanitary Engineering

RECEIVED
JUN 18 1967

DIVISION OF SANITARY ENGINEERING
ONTARIO WATER
GEORGE TOWN, ONT.

ONTARIO WATER RESOURCES COMMISSION

R E P O R T

INTRODUCTION

A water-pollution survey was carried out in the Township of Ancaster during the month of June 1966. Such surveys are performed by the Commission in an effort to locate and evaluate all existing and potential sources of pollution.

SCOPE OF SURVEY

The survey was confined to the urban area of the township in and immediately adjacent to the Police Village of Ancaster.

The survey involved the examination and sampling of local watercourses and sewer outfalls; interviews with municipal officials and the Wentworth County Health Unit; and a review of Commission files on water supply and waste treatment.

The information and results of the analyses of samples obtained during the survey are evaluated to determine what measures are required to prevent or eliminate water pollution.

DESCRIPTION OF AREA

The Township of Ancaster is situated in the southwest corner of the County of Wentworth, its northeast limit forming a common boundary with the City of Hamilton. The assessed population is 14,952 (1966 Municipal Directory).

The Police Village of Ancaster is situated in the northeast area of the township. The police village, which has a population of 1,302, and the immediate area have a total population

of approximately 9,100. This built-up or urban area is basically residential, with a sprinkling of small commercial centres. The urban development spreads along the north and south sides of Highway 2 and Hiawatha Boulevard and is bordered on the south by Highway 53.

The area is drained mainly by a system of shallow road-side ditches with slight gradients discharging ultimately to Ancaster and Mineral Springs creeks. A few storm drains have been provided.

The soil throughout most of the area is a fine-textured loam resembling silty clay. This soil overlies a heavier clay in most areas, except in the northeast where bedrock is quite near the surface and is overlain with heavy clay. The silty-clay soil is quite powdery and loose when dry but tends to retain moisture, offering relatively slow movement of water through it.

EXISTING SERVICES

Water Supply

The urban area of the township is served by a municipal water-supply system. The water is drawn from a number of drilled wells. Storage is provided by two elevated tanks having a combined capacity of 0.96 million gallons.

The system serves an estimated population of 9,100 through 2,300 service connections. The average daily water consumption in 1965 was 350,000 gallons.

Waste Disposal

Private septic tank systems are generally used for the

disposal of domestic wastes and the installations are supervised by the county health unit. There is no sanitary sewer system in the township.

Conditions noted during the survey indicated that the septic tank systems were not functioning properly in a number of locations. There was visual evidence that the effluent from these units was, either directly or otherwise, gaining access to local roadside ditches. A number of residents indicated that the effluent gravitates to the basement drainage system and is discharged subsequently via the sump pump to the drainage ditches. As mentioned earlier, a number of these ditches have slight gradients and a portion of the liquid waste was being contained in the immediate area.

In discussions with the Wentworth County Health Unit it was learned that a number of residential and commercial property owners have had considerable difficulty with malfunctioning septic tank systems. Because of soil conditions, topography, inadequate lot size and a high water table, correction on an individual basis in some cases is virtually impossible.

PRESENTATION OF RESULTS

The results of the analyses of samples collected during the survey are shown in the appendix. The sampling locations are shown on the accompanying map of the study area.

The common indicators of domestic wastes are the biochemical oxygen demand (BOD), suspended solids, anionic detergents (ABS) and coliform organisms. An explanation and the significance of these analyses is provided at the end of the report.

The results of the analyses indicate that domestic wastewater is gaining access to the local roadside ditches and is subsequently being carried to the local watercourses. In 19 of the 24 samples collected, the bacteriological examination showed the presence of coliform organisms in excess of the Commission objective of 2,400 per 100 ml. The BOD at a number of locations was found to be significantly higher than the 4 ppm objective for natural watercourses. The fact that ABS was shown to be present in any concentration is indicative of domestic pollution, as ABS does not occur naturally.

CONCLUSIONS

The presence of domestic pollution in many areas in the Police Village of Ancaster and adjacent urban area is confirmed, and is attributed to the malfunctioning of the private waste-disposal facilities.

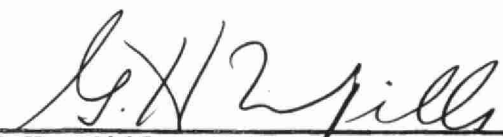
The soil, water-table and drainage characteristics of the area are such that the problems experienced with the private systems cannot be solved on an individual basis. A municipal water pollution control system will be required.

Until a municipal system is available it would be advisable to suspend further development in the area, to eliminate the possibility of increased pollution and associated health hazards.

RECOMMENDATIONS

1. A municipal water pollution control system should be provided.
2. Further development should not take place until a municipal system is available.

Approved by: _____


G.H. Mills, P.Eng.,
District Engineer,
Division of Sanitary Engineering.

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Prepared by:
A. Matwichuk, Eng. Technician

TOWNSHIP OF ANCASTER and POLICE VILLAGE OF ANCASTER

	Sample Location	Date	5-Day	SOLIDS		Anionic	Coliforms per 100 ml
			BOD (ppm)	Total (ppm)	Susp. (ppm)	Detergents as ABS (ppm)	
DSA-6.7	Ancaster Creek at Gulf Links Rd.	June 6	2.3	381	9	0.1	410,000
DSA-6.7	Drain Outlet at Gulf Links Rd.	"	1.4	562	3	0.2	65,000
DSA-6.2	Ancaster Creek at Mowhak Rd.	"	2.6	412	19	0.1	350,000
DSA-5.7	Ancaster Creek at Mill Rd. and Willow Ave.	"	3.6	436	31	0.1	740,000
DSA-5.1	Ancaster Creek at Lions Club Rd.	"	4.2	464	44	0.1	10,700
DSAA-5.8 D1	Roadside Ditch on Hiawatha Blvd.	"	5.6	832	174	0.1	220,000
DSAA-5.8 D2	Roadside Ditch on Oneida Ave.	"	4.6	610	52	0.1	23,000
DSAA-5.8 D3	Roadside Ditch on Iroquois Ave.	"	2.8	614	17	0.1	8,000
DSAA-5.8 D4	Roadside Ditch on Algonquin Ave.	"	2.0	624	3	0.1	240
DSAH-5.3 D1	Roadside Ditch on Montgomery and Vernon Rd.	June 7	11.	1224	600	4.8	2,300,000
DSAH-5.3 D2	Roadside Ditch on Montgomery and Vernon Rd.	"	3.6	614	14	0.5	1,800
DSAH-5.3 D3	Roadside Ditch on Douglas Drive and Haig Rd.	"	7.4	658	50	2.0	40,000
DSAH-5.3 D4	Roadside Ditch on Douglas Drive and Elizabeth Pl.	"	25.	924	424	2.7	1,200,000
DSAH-5.3 D5	Roadside Ditch on Douglas Drive and Alexander Rd.	"	44.	3656	3158	2.2	87,000

TOWNSHIP OF ANCASTER and POLICE VILLAGE OF ANCASTER - cont'd.

Sample Location	Date	5-Day	SOLIDS		Anionic Detergents as ABS (ppm)	Coliforms per 100 ml
		BOD (ppm)	Total (ppm)	Susp. (ppm)		
DSAH-5.3 D6 Roadside Ditch on Montgomery and Bailey	June 7	12.	916	28	0.5	58,000
DSAA-5.1 Small Creek on No. 2 Hwy. east of Ancaster Hgts.	"	5.4	482	30	0.0	300
DSA-7.8 W Catch Basin at Hatton and Calvin Drive	"	1.5	594	5	0.1	100
DSA-7.8 D Spring at Base of Calvin Dr.	"	1.9	864	3	0.1	100
DSA-7.8 Ancaster Creek at Calvin Dr.	"	2.8	448	18	0.1	8,000
DSAB-7.8 Small Creek at Rivina Cres.	"	1.3	598	59	0.1	21,000
DSAMS-6.9 D1 Roadside Ditch at 122 Mansfield Rd.	June 10	9.6	3016	220	0.2	3,900
DSAMS-6.9 D2 Roadside Ditch at 109 Mansfield Rd.	"	8.0	950	32	1.4	1,560,000
DSAMS-7.7 W Crestview Ave. Storm Sewer Outlet	"	17.	296	28	1.6	1,100,000
DSA-8.3 Ancaster Creek at Hwy. 53	"	6.8	528	41	0.1	7,100

APPENDIX

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

All the laboratory tests included in this report were performed at the Ontario Water Resources Commission laboratory in Toronto.

A. BACTERIOLOGICAL EXAMINATION

The membrane filter technique is used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warm-blooded animals. They are always present in large numbers in sewage and are generally minimal in other water pollutants.

The results of the examinations are reported as "M.F. Coliform Count per 100 ml".

The Commission's objective for stream sanitation is a coliform density of not greater than 2,400 organisms per 100 ml.

B. SANITARY CHEMICAL ANALYSES

BIOCHEMICAL OXYGEN DEMAND (BOD):

Biochemical Oxygen Demand is reported in parts per million (ppm), and is an indication of the amount of oxygen required for the stabilization of decomposable organic matter in the water. The completion of the laboratory test requires five days, under the controlled incubation temperature of 20°C.

The Commission objective for stream water quality is an upper limit of 4 ppm.

SOLIDS:

The value for total solids, expressed in parts per million (ppm), is the sum of the values for the suspended and the dissolved matter in the water. The concentration of suspended solids is generally the most significant of the solids analyses in regard to stream water quality.

The effects of suspended solids in water are reflected in difficulties associated with water purification, depositions in streams, and injury to the habitat of fish.

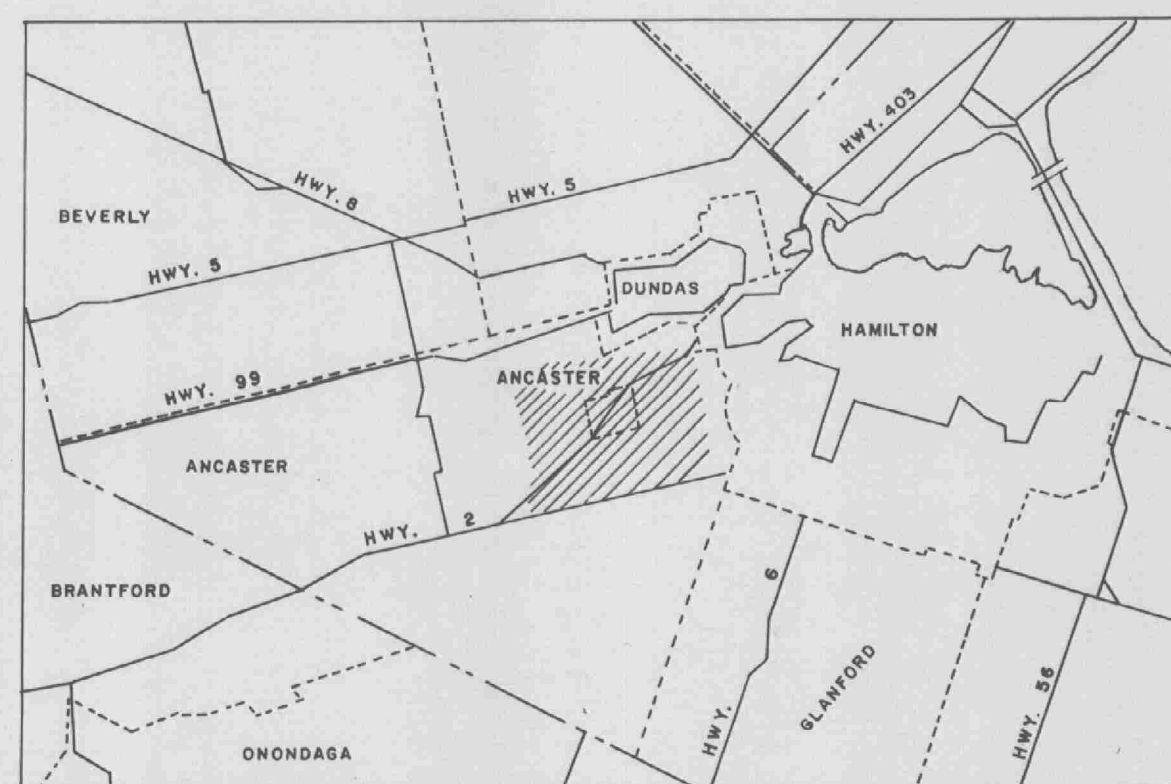
Where suspended solids values are less than 20 ppm laboratory difficulties are experienced and the turbidity is determined instead.

TURBIDITY:

Turbidity is caused by the presence of suspended matter, such as clay, silt, finely divided organic matter, plankton and other microscopic organisms in water. It is an expression of the optical property of a sample and results are reported in "Silica Units".

ABS (ALKYL BENZENE SULFONATE):

The alkyl benzene sulfonate portion of the anionic detergents is reported in ppm. The test is generally employed to indicate the presence of illegal discharge of wastewater to storm drains.



AREA PLAN
/// — SURVEY AREA

- LEGEND**
- DSA-5.1 — STREAM SAMPLING POINT SHOWING MILEAGE
 - DSA-5.3 — OUTFALL SHOWING STREAM AND MILEAGE
 - D-1 — TYPE OF OUTFALL
 - D — DRAINAGE OR DITCH
 - W — STORM SEWER

ONTARIO WATER RESOURCES COMMISSION	
TOWNSHIP OF ANCASTER	
POLICE VILLAGE OF ANCASTER	
8 URBAN AREA	
WATER POLLUTION SURVEY 1966	
SCALE: 1"=800'	
DRAWN BY: R. S.	DATE: SEPT. 1966
CHECKED BY:	DRAWING NO: 66-64